

Are You Using Autoverification in Your Lab? If Not, Why Not?

Labinfotechsummit 2007 – Las Vegas, NV

**Leonard K. Dunikoski, Ph.D., DABCC, CHE
Ass't Vice President, Clinical Operations
Raritan Bay Medical Center
Perth Amboy, New Jersey
ldunikoski@rbmc.org**



Challenges: “The Future Starts TODAY, Not Tomorrow”

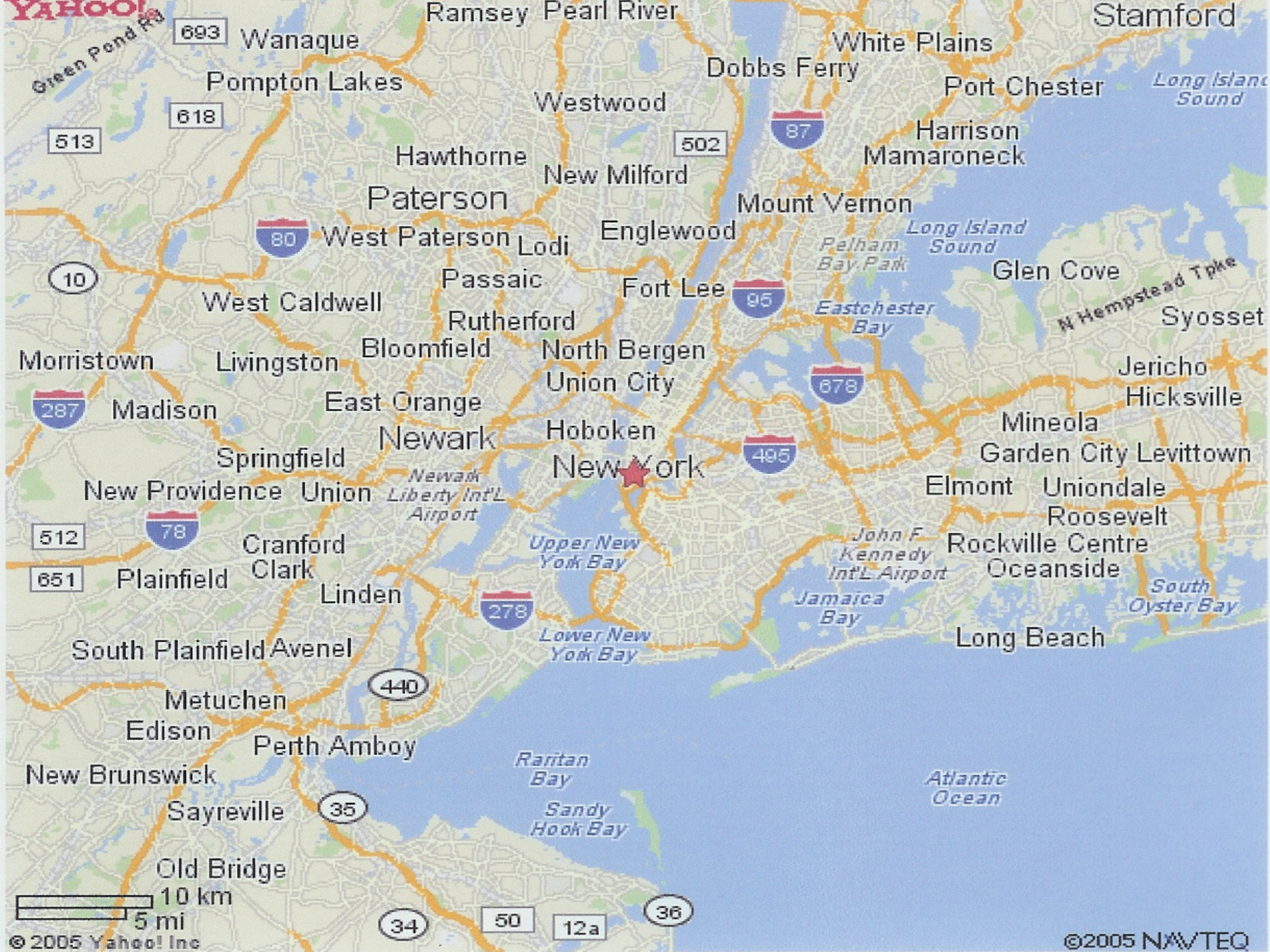
- Increasing Regulations
- Decreasing Reimbursement
- Competition from Other Hospital Departments
- Looming Staffing Shortages



Hospital: Background Information

- Perth Amboy Division = 360 beds
- Old Bridge Division = 119 beds
- 12 miles apart







Possible Solutions to Challenges:

- Do Nothing
- Outsource
- Decrease Dependence on Labor Component



Decrease Labor Component:

- Total Laboratory Automation
- Partial Laboratory Automation
- Computerization
- Standardize Pre-Analytical, Analytical, Post-Analytical



Return on Investment (ROI):

- Total Laboratory Automation
- Partial Laboratory Automation
- Computerization
- Standardize Pre-Analytical, Analytical, Post-Analytical



1996

- **Chemistry + Hematology = Core Lab**
- **Reduce QC to 2x / day (Vitros U/A)**
- **Interface 3 Additional Instruments**
- **STAT alarm on label printer,
pneumatic tube station**
- **Reference Lab – LIS Interface**
- **Plasma Instead of Serum**
- **5:00 A.M. Phlebotomy**



1997

- **Nursing Assumes ED Phlebotomy**
- **BioPlexus Safety Needle**
- **Autoverification Introduced (Vitros to LIS to HIS)**



1998

- **Coagulation Autoverification (MLA 1400)**
- **Duplicate Order Checking in HIS**
- **Vanish Point Safety Device**



1999

- **Gel System for Blood Bank**
- **Move to Open Lab**
- **14 Year Old Vitros Not Y2K**
- **Evaluate New Chemistry Instruments**







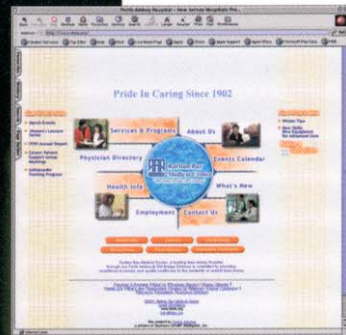
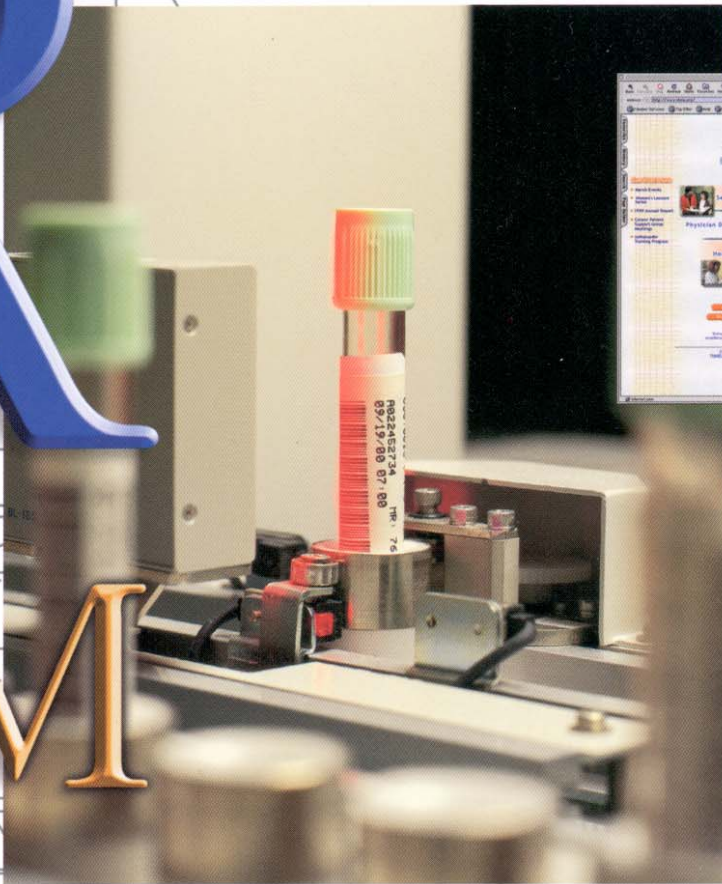
R

THE FUTURE IS NOW

B

M

C



RARITAN BAY MEDICAL CENTER • 2000 ANNUAL REPORT



**Raritan Bay
Medical Center**

"We Take Pride In Caring"

Autoverification

- Build a Set of Rules
- Try to Duplicate what a Good Technologist Would Do
- High and Low Limits?
- Normal Range?
- Linearity of Instrument?
- Critical Values?



Autoverification

- Delta Checks?
- Instrument Flags/Error Codes?
- Associated Tests?



Auto Verification Locations

- Instrument Itself
- Instrument – LIS Interface (Middleware)
- LIS



Morning Run

- 30 CMPs
- 40 BMPs
- 10 Electrolytes
- 5 Liver Panels
- = **800 results!**
- **70% (560 results) pass all criteria**
- **30% (240) fail at least one criterion**



Autoverification: Porcelain

- Check to see QC has been run and is within acceptable limits
- Check to ensure no instrument flags
- Serum porcelain: linearity 10 – 900
- Delta check: within 10% in 24 hrs
- Critical values: <50 or >300



Autoverification: Porcelain

- **Porcelain Result = 450**
- QC run and is within acceptable limits
- No instrument flags
- Within linearity 10 – 900
- Delta check within 10% in 24 hrs
- **FAILED** Critical values: <50 or >300
- **Requires intervention by technologist**



Before You Implement Autoverification:

- TEST each one of your rules X times to see what results were released:
instrument vs. LIS vs. HIS
- PASS all criteria vs. some criteria
- TEST each one of your rules X times to see what results were NOT released
- FAIL all criteria vs. some criteria



Before You Implement Autoverification:

- “Cup” vs. Test
- Calculated Results?
- DECIDE how the technologist will know what hasn't been released especially
critical results





Autoverification: Porcelain

- Check to see QC has been run and is within acceptable limits
- Check to ensure no instrument flags
- Serum porcelain: linearity **50 – 300**
- Delta check: within 10% in 24 hrs
- Critical values: <50 or >300



Autoverification: Porcelain

- **Porcelain Result = 450**
- QC run and is within acceptable limits
- No instrument flags
- **FAILED** linearity <30 – >300
- Delta check within 10% in 24 hrs
- **FAILED** Critical values: <50 or >300
- **Requires intervention 2 times**



After You Implement Autoverification:

- Periodic Retesting
- 6 Months?
- Quarterly?
- Monthly?



Multiple Instruments

- Plan
- Set Up Logic Trees
- How will you catch Critical Results?



What Else?

- Automation & Computerization



Automation?

- Standardize Pre-Analytical Phase: Patient ID? Robotics?
- Eliminate Steps that Don't Add Value: Six Sigma; LEAN; Etc.
- Use Software: Sample Tracking; Data Reduction



What Else?

- Multiple Sites
- Standardize Instrumentation (sometimes “more than you need”)
- Staff Move from Site to Site



What Else?

- Rearrange Instrument Location
- What Helps Evenings, Nights & Weekends?
- Consolidate Work Stations
- Take Advantage of Vendors' Resources



advance

FOR ADMINISTRATORS OF THE

LABORATORY

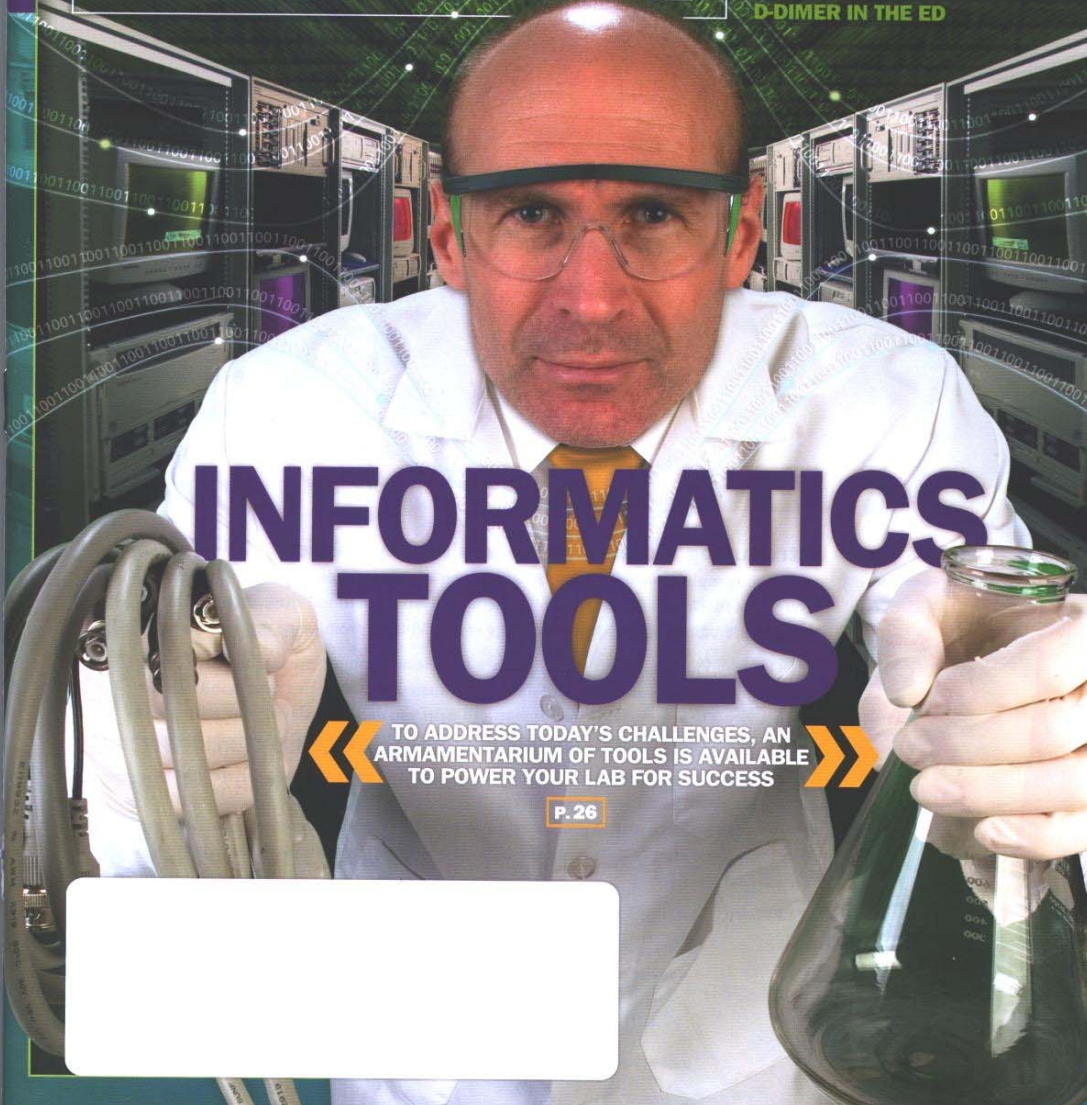
P. 34

AUTOMATING THE
MDx LABORATORY

P. 56

THE POWER OF
D-DIMER IN THE ED

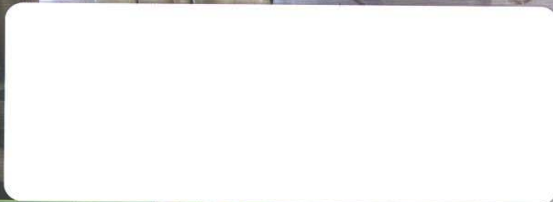
THE 2006 ADVANCE
INFORMATION
SYSTEMS BUYER'S
GUIDE
P. 90



INFORMATICS TOOLS

« TO ADDRESS TODAY'S CHALLENGES, AN
ARMAMENTARIUM OF TOOLS IS AVAILABLE
TO POWER YOUR LAB FOR SUCCESS »

P. 26



Will You Actually Gain Anything?

- Increase Volume with Same or Decreased Staff
- Add New Tests (Flow Cytometry, etc.)



Perth Amboy Chemistry Lab Staffing

- 1996: 12.9 Actual FTEs
- 2000: 9.9 Actual FTEs
- 2006: 8.0 Actual FTEs



What About ROI in YOUR Lab?

- Do Nothing
- Outsource
- Decrease Dependence on Labor Component



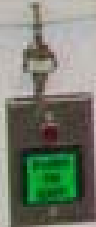
“The Future Starts TODAY, not Tomorrow”

- Autoverification WORKS!





Handwritten notes on a white card, possibly a checklist or schedule, with some illegible text.



Handwritten notes on a white card, possibly a checklist or schedule, with some illegible text.



THANK YOU!

